REMARKS

Claim Rejections - 35 USC § 103

1. Claims 1-5, 10-13 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bishay (US 6507364) in view of Orlick (2003/0098925).

5   **Response**:

Claim 1

     As recited by Bishay in col. 5, lines 34-46, "As shown in FIGS. 3-6, the horizontal edge detection kernel in the RGB system has a positive sign for A kernel pixel 22 and B kernel pixel 24 and a negative sign for C kernel pixel 26 and D kernel pixel 28. The vertical

10   edge detection kernel has a positive sign for A kernel pixel 22 and C kernel pixel 26 and a negative sign for B kernel pixel 24 and D 28 kernel pixel 28. The 45-degree edge detection kernel has only A kernel pixel 22 and D kernel pixels 28, with a positive sign for A kernel pixel 22 and a negative sign for D kernel pixel 28. The negative 45-degree edge detection kernel has only B kernel pixel 24 and C kernel pixel 26, with a positive sign for B kernel

15   pixel 24 and a negative sign for C kernel pixel 26." (*emphasis added*)

     In addition, as recited by Bishay in col. 5, lines 47-60, "FIG. 7 illustrates a flowchart presenting the steps of the method of the present invention performed for each current pixel X 20. **At each current pixel X 20 of the image frame, the four same-color neighboring edge**

20   **detection kernel pixels A 22, B 24, C 26, and D 28 are determined in step 32 of FIG. 7. For each current pixel X 20, resulting intensity values for each kernel are calculated in step 34, by adding or subtracting intensity values of the four corresponding edge detection kernel pixels A 22, B 24, C 26, and D 28, according to their sign**. For example, the horizontal edge detection kernel for the pixel X 20 has the resulting intensity value equal

25   to the sum of A kernel pixel 22, B kernel pixel 24, C kernel pixel 26 multiplied by (-1), and D kernel pixel 28 multiplied by (-1)." (*emphasis added*)

In brief, Bishay utilizes the predetermined kernels indicating different edge directions to add or subtract intensity values of the four pixels A, B, C and D. Thus, Bishay fails to teach or suggest the claimed feature "calculating a plurality of first horizontal pixel value differences between pixels positioned in the first row and a plurality of second horizontal pixel value differences between pixels positioned in the second row" in claim 1. Moreover, the kernels utilized by Bishay are 2x2 filters which differ from the claimed feature "the first and second horizontal pixel value differences respectively **correspond to opposite quadrants of the image** with the pixel needing to be interpolated being an origin" in claim 1. (*emphasis added*) Applicant respectfully states that Examiner misunderstands the teachings of Bishay.

Regarding Orlick, as recited in lines 4-8 of paragraph [0021] thereof, horizontal edge detector 110 and vertical edge detector 120 work by determining a numeric value, called "edge strength," representing the degree of change in the values of the pixels in the scanned rows adjacent to a target pixel. Thus, the operation of the edge detectors suggested by Orlick differs from the claimed features of claim 1, the claimed feature "the first and second horizontal pixel value differences respectively **correspond to opposite quadrants of the image** with the pixel needing to be interpolated being an origin" especially. (*emphasis added*)

Furthermore, Bishay does not disclose the claimed feature "comparing horizontal pixel value differences with a threshold **to control whether the interpolation direction is orthogonal to the first and second rows**" in claim 1. (*emphasis added*) Bishay merely utilizes the results from the kernels thereof to determine an edge direction, without controlling whether an interpolation direction is orthogonal to a specific row according to horizontal pixel value differences. Thus, Bishay did not disclose the claimed feature "comparing the plurality of first horizontal pixel value differences with a first threshold and the plurality of second horizontal pixel value differences with a second threshold to control whether the interpolation direction is orthogonal to the first row and the second row" in claim 1 of the

present application.

Please note that, should one of ordinary skill in the art combines Bishay and Orlick, the operations of the kernels of Bishay would be hindered by Orlick's teaching since, in

5   Bishay's kernels, there is no place for inserting the "edge strength" provided by Orlick.

With the present invention being considered as a whole, it is clear that the prior art references fail to teach or suggest the claimed features of claim 1, the claimed feature "calculating a plurality of first horizontal pixel value differences between pixels positioned in

10   the first row and a plurality of second horizontal pixel value differences between pixels positioned in the second row, wherein **the first and second horizontal pixel value differences respectively correspond to opposite quadrants of the image with the pixel needing to be interpolated being an origin**" especially. (*emphasis added*) Upon careful review of Bishay's and Orlick's teachings, the applicant finds no description pertinent to the

15   above-identified claimed features. Applicant respectfully asserts that the claimed features of claim 1 are not obvious in view of the prior art references of Bishay and Orlick. That is, claim 1 is patentable over the cited references. Reconsideration of claim 1 is respectfully requested.

Claims 2-5 and 10-13

20   Claims 2-5 and 10-13 are dependent on claim 1, and should be allowed if claim 1 is found allowable.

Claim 14

In light of the above statements for claim 1, Applicant respectfully asserts that the claimed features of claim 14 are not obvious in view of the prior art references of Bishay and

25   Orlick. That is, claim 14 is patentable over the cited references. Reconsideration of claim 14 is respectfully requested.

Claims 15-19

Claims 15-19 are dependent on claim 14, and should be allowed if claim 14 is

found allowable.

Claim 20

In light of the above statements for claim 1, Applicant respectfully asserts that the claimed features of claim 20 are not obvious in view of the prior art references of Bishay and Orlick. That is, claim 20 is patentable over the cited references. Reconsideration of claim 20 is respectfully requested.

Claims 21-22

Claims 21-22 are dependent on claim 20, and should be allowed if claim 20 is found allowable.

2. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bishay in view of Orlick in further view of Minami (2004/0246546).

Response:

Claims 6-9

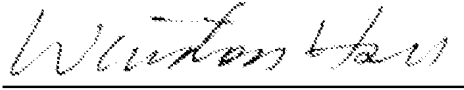Claims 6-9 are dependent on claim 1, and should be allowed if claim 1 is found allowable.

Conclusion:

Thus, all pending claims are submitted to be in condition for allowance with respect to the cited arts for at least the reasons presented above. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,

Winston Hsu (signature)   Date: _____ 09.04.2007 _____

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10   Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)